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FIG. 1 shows a prior LED component, including an LED chip 11 placed on a chip cup 12, a phosphor layer 15 covering the LED chip 11, an electrode 13, bonding wires 14 connecting the LED chip 11, the electrode 13 and the chip cup 12, respectively, and a transparent encapsulant 16. FIG. 2 shows an enlarged hint diagram of the LED chip 11 and phosphor layer 15 in FIG. 1.

FIG. 3 shows a hint diagram of the phosphor layer 15 of the prior LED component. The phosphor layer 15 is formed by mixing the YAG phosphor 31 and the epoxy 32 filling the gaps among the particles of the YAG phosphor 31 through a high temperature process. FIG. 4 shows a light-mixing principle of the prior LED component. The light emitted from the LED chip 11 and passing through the epoxy 32 filling the gaps among the particles of the YAG phosphor 31 has a wavelength B, and a light excited by the YAG phosphor 31 which absorbs a portion of wavelength B1 has a wavelength Y. The lights of wavelength B and Y form another light of wavelength W, which leaves the surface of the LED chip by different emitting angles. However, since the YAG phosphor 31 and the epoxy 32 have difference specific gravities, after baking, the YAG phosphor 31 will deposit and the density of the phosphor layer 31 will not be kept in a uniform state. Besides, the above light mixing happens only on the emitting surface (or the surface of the phosphor layer 15) of the LED component. Yet much light will disappear before the mixing happens, and it causes a heavy loss of luminant efficiency.

2. By the scatteration of the light-scattering particles, the light emitted from the light source can completely excite the phosphor particles in every layer of the light-mixing layer and convert into [a higher] another wavelength light.

As in FIG. 6, the light-mixing layer 61 according to one embodiment of the present invention is placed on a chip cup 63, and it can mix and coat with an epoxy and enclose a LED chip 62 (an example of a light source) for completely absorbing the light emitted from the LED chip 62. The light-mixing layer 61 is composed of light-scattering particles 64, phosphor particles 65 and diffuser particles 66. The light-scattering particles 64 could be made of quartz, glass or other polymeric transparent materials, the phosphor particles 65 could be made of [YAG] phosphor particles and the diffuser particles 66 could be made of BaTiO₃, Ti₂O₃ and SiO_x. After a baking or UV line illumination, the light-scattering particles 64, phosphor particles 65 and diffuser particles 66 will be arranged in a particle-interlaced order by the methods of inertial force, expessure, condensation, etc.

FIG. 8 shows a light-mixing flow chart of the present invention. In step 81, an LED chip 62 emits a light by applying a current source. In step 82, after the LED chip 62 emits a light into the light-mixing layer 61, the light-scattering particles 64 in the light-mixing layer 61 will transfer and change the ongoing direction of the light. In step 83, the phosphor particles 65 absorb a portion of light emitted from the light-scattering particles 64 and diffuser particles 66 and further excite another wavelength light. In step 84, the diffuser particles 66 mix the light emitted from the phosphor particles 65 and light-scattering particles 64. In step 85, by the characteristic of continuing light scattering, light transformation and light mixture are performed in every particle (including the light-scattering particles 64, phosphor particles 65 and diffuser particles 66) of the light mixing layer 61, and a uniform, bright and constant-color-temperature light can be obtained.